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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/759,973	01/16/2004	Richard A. Hogle	M03A445	8329

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EXAMINER	
BOYER, RANDY	
ART UNIT	PAPER NUMBER
1797	
MAIL DATE	DELIVERY MODE
10/31/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/759,973	HOGLE ET AL.	
	Examiner	Art Unit	
	RANDY BOYER	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 October 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,10-16,18 and 19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,10-16,18 and 19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Reopening of Prosecution

1. Prosecution on the merits of this application is reopened on claims 1-7, 10-16, 18, and 19 considered unpatentable for the reasons indicated below.

Response to Amendment

2. Examiner acknowledges Applicant's response filed 13 October 2008 containing remarks.

3. Claims 1-7, 10-16, 18, and 19 are pending.

4. The previous grounds for rejection of claims 1-7, 10-16, 18, and 19 under 35 U.S.C. 103(a) are withdrawn in view of Applicant's remarks and Examiner's reconsideration of the record.

5. New grounds for rejection of claims 1-7, 10-16, 18, and 19 under 35 U.S.C. 103(a) are entered. The rejections follow.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which

> said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1-7, 10-16, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tojo (EP 1367149 A1) in view of Hartmann (DE 4136885 C1) and Faschingbauer (US 4,465,654). Alternatively, claims 1-7, 10-16, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tojo (EP 1367149 A1) in view of Hartmann (DE 4136885 C1) and Faschingbauer (US 4,465,654), as evidenced by Hodgson (US 5,378,324).

10. With respect to claims 1 and 14, Tojo discloses an apparatus (see Tojo, Fig. 1) comprising an electrolyte aerosol removal unit (14) connected to a fluorine generator (1) and containing an aerosol removal composition (e.g. sodium fluoride or soda lime) (see Tojo, column 7, lines 17-29) wherein the electrolyte aerosol removal unit is adapted to allow the fluid to flow there through (see Tojo, column 5, lines 25-27).

Tojo does not explicitly disclose wherein the apparatus further comprises a catalytic unit including a catalytically activated combustion surface, the catalytic unit adapted to be positioned inside of a forced convection duct, the catalytic unit fluidly connected to the aerosol removal unit by a conduit, the catalytically activated combustion surface adapted to combust the hydrogen in an oxygen-containing stream; or wherein the apparatus is useful for disposal of hydrogen.

However, Hartmann discloses an apparatus (see Hartmann, Fig. 1) useful for the disposal of hydrogen (see Hartmann, English Abstract) wherein the apparatus comprises a catalytic unit (6) comprising a catalytically activated combustion surface (see Hartmann, column 4, lines 34-43), and wherein the catalytic unit (6) is adapted to be positioned inside of a forced convection duct (20). In addition, Hartmann explains that the apparatus of his invention is preferably used to dispose of hydrogen in hydrogen-containing mixtures such as that generated during an electrolyte process (e.g. hydrogen produced in the fluorine generation process of Tojo) (see Hartmann, column 1, lines 3-8). Hartmann also notes that his apparatus provides for the safe disposal of hydrogen without the loss of essential process chemicals (see Hartmann, English Abstract; and column 1, lines 40-46). Finally, Examiner notes that Hartmann is not

particularly limited with respect to the form of catalyst to be used in his catalytic unit. In this regard, Faschingbauer discloses the use of platinum and rare earth catalytic materials supported on metal screens for use in oxidation reactions, e.g. the catalytic oxidation reaction carried out in the catalytic unit of Hartmann (see Faschingbauer, Abstract). Faschingbauer explains that his catalyst material provides a cost savings because it requires a reduced amount of noble metal materials (see Faschingbauer, column 2, lines 65-68).

Therefore, the person having ordinary skill in the art of hydrogen disposal would have been motivated to: (1) modify the apparatus of Tojo so as to incorporate the catalytic unit of Hartmann in order to provide a safe and effective means for disposing of the hydrogen generated during the electrolytic fluorine generation process of Tojo; and (2) substitute use of the wire catalyst material of Faschingbauer in place of Hartmann's catalyst so as to realize a cost savings from the lower amount of noble metal required to carry out the catalytic oxidation of hydrogen.

Finally, the person having ordinary skill in the art of hydrogen disposal would have had a reasonable expectation of success in modifying the apparatus of Tojo as described above because: (1) both Tojo and Hartmann disclose apparatuses for carrying out an electrolytic reaction; and (2) Hartmann explicitly discloses the use of his catalytic unit in conjunction with an electrolytic cell (e.g. element 1 of Tojo's Fig. 1) in order to remove excess hydrogen produced as a by-product of electrolyte reactions (e.g. the hydrogen produced during the electrolytic fluorine generation process of Tojo).

11. With respect to claim 2, the apparatus of Tojo appears to be modular (see Tojo, Fig. 1).

12. With respect to claim 3, portability alone is not sufficient to patentability distinguish over a prior art device unless there are new or unexpected results. See MPEP 2144.04(V)(A) (citing *In re Lindberg*, 194 F.2d 732 (CCPA 1952)).

13. With respect to claim 4, Tojo discloses wherein the aerosol removal component fills an adsorption column (e.g. "in bed form") (see Tojo, column 7, lines 17-29).

14. With respect to claim 5, Tojo discloses wherein the aerosol removal composition is sodium fluoride or soda lime (see Tojo, column 7, lines 17-29).

15. With respect to claim 6, Tojo discloses wherein nickel is a preferred material of construction for the aerosol removal unit and associated equipment, namely because of its anticorrosive properties (see Tojo, column 7, lines 45-50).

16. With respect to claim 7, Tojo is not limited in any way with respect to the operating temperature of his aerosol removal unit. Thus, Examiner finds that the temperature maintained within the aerosol removal unit of Tojo will be in accordance with those typically observed in other (i.e. similar) processes for the electrolytic production of fluorine. In this regard, Examiner notes that Hodgson discloses a process for the electrolytic production of fluorine wherein a process temperature of about 100°C is maintained throughout (see Hodgson, column 4, lines 62-65; and column 5, lines 18-21).

17. With respect to claims 10 and 11, Hartmann discloses wherein the catalytic unit is operated at a temperature between 50°C and 200°C (see Hartmann, column 4, lines 44-53).

18. With respect to claim 12, Tojo discloses wherein the aerosol removal unit (14) is positioned at a distance from the fluorine generator (1) (see Tojo, Fig. 1). In addition, Hartmann discloses wherein the catalytic unit (6) is positioned at a distance from the electrolytic cell (1) (see Hartmann, Fig. 1).

19. With respect to claim 13, "making integral" of a prior art device is generally held to be a matter of obvious engineering design choice in the absence of new or unexpected results. See MPEP 2144.04(V)(B) (citing *In re Larson*, 340 F.2d 965 (CCPA 1965)).

20. With respect to claim 15, the recitation of a particular catalyst composition for use in the "catalytic unit" of the claimed apparatus does not impart any *structural* distinction to the claimed apparatus *per se*, i.e. such limitations are interpreted as *composition* or *process* limitations that do not further limit the *apparatus* of claim 1 (see MPEP § 2114).

21. With respect to claim 16, Tojo discloses a method comprising the steps of flowing a fluid comprising hydrogen and residual amounts of HF (via hydrogen gas outlet (23) and gas line (28)) from a fluorine generator (1) through an electrolyte removal component (14) comprising an aerosol removal composition (e.g. sodium fluoride or soda lime) (see Tojo, column 7, lines 17-29), wherein the fluid contacts the aerosol removal composition thereby forming a hydrogen-rich fluid reduced in aerosol (see Tojo, Fig. 1; and column 7, lines 17-29).

Tojo does not disclose wherein the method further comprises the step of contacting the hydrogen-rich fluid reduced in aerosol with a catalytically activated combustion surface positioned inside of a forced convection duct, while a gas comprising oxygen flows through the forced convection duct, thereby combusting the hydrogen with oxygen in the oxygen-containing stream.

However, Hartmann discloses a method for the disposal of hydrogen (see Hartmann, English Abstract) wherein hydrogen-rich fluid is contacted with a catalytically activated combustion surface positioned inside of a forced convection duct (20), while a gas comprising oxygen flows through the forced convection duct (20), thereby combusting the hydrogen with oxygen in the oxygen-containing stream (see Hartmann, Fig. 1; and column 4, lines 18-64). In addition, Hartmann explains that the method of his invention is preferably used to dispose of hydrogen in hydrogen-containing mixtures such as that generated during an electrolyte process (e.g. hydrogen produced in the fluorine generation process of Tojo) (see Hartmann, column 1, lines 3-8). Hartmann also notes that his method provides for the safe disposal of hydrogen without the loss of essential process chemicals (see Hartmann, English Abstract; and column 1, lines 40-46). Finally, Examiner notes that Hartmann is not particularly limited with respect to the form of catalyst to be used in his catalytic unit. In this regard, Faschingbauer discloses the use of platinum and rare earth catalytic materials supported on metal screens for use in oxidation reactions, e.g. the catalytic oxidation reaction carried out in the catalytic unit of Hartmann (see Faschingbauer, Abstract). Faschingbauer explains that his

catalyst material provides a cost savings because it requires a reduced amount of noble metal materials (see Faschingbauer, column 2, lines 65-68).

Therefore, the person having ordinary skill in the art of hydrogen disposal would have been motivated to: (1) modify the apparatus of Tojo so as to incorporate the catalytic unit of Hartmann in order to provide a safe and effective means for disposing of the hydrogen generated during the electrolytic fluorine generation process of Tojo; and (2) substitute use of the wire catalyst material of Faschingbauer in place of Hartmann's catalyst so as to realize a cost savings from the lower amount of noble metal required to carry out the catalytic oxidation of hydrogen.

Finally, the person having ordinary skill in the art of hydrogen disposal would have had a reasonable expectation of success in modifying the method of Tojo as described above because (1) both Tojo and Hartmann disclose methods for carrying out an electrolytic reaction; and (2) Hartmann explicitly discloses the use of his catalytic unit in conjunction with an electrolytic cell (e.g. element 1 of Tojo's Fig. 1) in order to remove excess hydrogen produced as a by-product of electrolyte reactions (e.g. the hydrogen produced during the electrolytic fluorine generation process of Tojo).

22. With respect to claim 18, Tojo discloses a method for generating fluorine comprising the steps of: (a) generating a fluorine-rich stream (exiting fluorine generator (1) through fluorine gas outlet (22)) and a hydrogen-rich stream (exiting fluorine generator (1) through hydrogen gas outlet (23)), the hydrogen-rich stream comprising minor amounts of electrolyte and hydrogen fluoride (see Tojo, column 7, lines 17-29);

and (b) routing the fluorine-rich stream to a cleanup train (e.g. HF absorber (15)) to produce a purified fluorine stream (see Tojo, Fig. 1; and column 7, lines 17-50).

Tojo does not disclose wherein the method further comprises routing the hydrogen-rich stream to an apparatus for the oxidative combustion of the hydrogen.

However, Hartmann discloses a method for the disposal of hydrogen (see Hartmann, English Abstract) wherein hydrogen-rich fluid is contacted with a catalytically activated combustion surface positioned inside of a forced convection duct (20), while a gas comprising oxygen flows through the forced convection duct (20), thereby combusting the hydrogen with oxygen in the oxygen-containing stream (see Hartmann, Fig. 1; and column 4, lines 18-64). In addition, Hartmann explains that the method of his invention is preferably used to dispose of hydrogen in hydrogen-containing mixtures such as that generated during an electrolyte process (e.g. hydrogen produced in the fluorine generation process of Tojo) (see Hartmann, column 1, lines 3-8). Hartmann also notes that his method provides for the safe disposal of hydrogen without the loss of essential process chemicals (see Hartmann, English Abstract; and column 1, lines 40-46). Finally, Examiner notes that Hartmann is not particularly limited with respect to the form of catalyst to be used in his catalytic unit. In this regard, Faschingbauer discloses the use of platinum and rare earth catalytic materials supported on metal screens for use in oxidation reactions, e.g. the catalytic oxidation reaction carried out in the catalytic unit of Hartmann (see Faschingbauer, Abstract). Faschingbauer explains that his catalyst material provides a cost savings because it requires a reduced amount of noble metal materials (see Faschingbauer, column 2, lines 65-68).

Therefore, the person having ordinary skill in the art of hydrogen disposal would have been motivated to: (1) modify the apparatus of Tojo so as to incorporate the catalytic unit of Hartmann in order to provide a safe and effective means for disposing of the hydrogen generated during the electrolytic fluorine generation process of Tojo; and (2) substitute use of the wire catalyst material of Faschingbauer in place of Hartmann's catalyst so as to realize a cost savings from the lower amount of noble metal required to carry out the catalytic oxidation of hydrogen.

Finally, the person having ordinary skill in the art of hydrogen disposal would have had a reasonable expectation of success in modifying the method of Tojo as described above because (1) both Tojo and Hartmann disclose methods for carrying out an electrolytic reaction; and (2) Hartmann explicitly discloses the use of his catalytic unit in conjunction with an electrolytic cell (e.g. element 1 of Tojo's Fig. 1) in order to remove excess hydrogen produced as a by-product of electrolyte reactions (e.g. the hydrogen produced during the electrolytic fluorine generation process of Tojo).

23. With respect to claim 19, Hartmann discloses wherein the oxygen-containing stream is exhaust gases (see Hartmann, entire disclosure).

Response to Arguments

24. Applicant's arguments filed 13 October 2008 have been fully considered but they are not persuasive.

25. Examiner understands Applicant's principal arguments to be:

I. The mere fact that the use of soda lime and sodium fluoride may remove some HF does not mean that the

Tojo apparatus would necessarily remove electrolyte aerosol. The Examiner cannot conveniently add components for removal to Tojo that Tojo does not mention at all, i.e. the electrolyte aerosol.

II. The catalytic unit (6) of Hartmann is not positioned "in" the forced convection duct (20), but rather is attached to the electrolytic cell (1) through a conduit (20).

III. One cannot show obviousness through a combination of references without some underlying teaching or suggestion for making such combination.

IV. Examiner's statement that "the apparatus of Tojo appears to be modular" has no basis in anything actually presented in the Tojo reference.

V. Portability provides significant advantages for operation of the present invention and is certainly not contemplated by either Tojo or Hartmann.

26. With respect to Applicant's first argument, Applicant's claims merely specify "an electrolyte aerosol removal unit . . . containing an aerosol removal composition" (see Applicant's claims 1, 16, and 18). Applicant's claims do *not* otherwise specify wherein the aerosol removal unit is used to remove carbon dioxide and water vapor. In any event, however, since Tojo explicitly discloses the use of soda lime and sodium fluoride (see Tojo, column 7, lines 26-29) as aerosol removal compositions (*which are the same as the preferred aerosol removal compositions disclosed by Applicant*) (see Applicant's specification, page 3, paragraph [0009]), Examiner submits that Tojo's aerosol removal compositions would necessarily (i.e. inherently) remove carbon dioxide and water vapor. Indeed, if such were not the case, then Applicant's claims would fail for lack of enablement since Applicant's specification does not provide any guidance with respect

to which specific soda limes and sodium fluorides would be suitable as "aerosol removal compositions" and which soda limes and sodium fluorides would not be suitable.

27. With respect to Applicant's second argument, Examiner submits that Hartmann clearly discloses wherein the catalytic unit (6) is positioned "in" (i.e. within) the forced convection duct (20). As can clearly be seen in Hartmann's Fig. 1, the catalytic unit (6) is located within the forced convection duct (20), with the forced convection duct (20) being connected on both sides of the catalytic unit (6).

28. With respect to Applicant's third argument, the rationale for combining the Tojo and Hartmann references are clearly indicated *supra* at paragraphs 10, 21, and 22.

29. With respect to Applicant's fourth argument, Examiner notes wherein Applicant defines "modular" to mean "constructed in standardized units and dimensions for flexibility and variety in use" (see Applicant's specification, page 5, paragraph [0022]). Applicant has not provided any clear explanation for why or how the device of Tojo fails to meet Applicant's definition of "modular."

30. With respect to Applicant's fifth argument, see MPEP § 2144.04(V)(A).

Conclusion

31. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Randy Boyer whose telephone number is (571) 272-7113. The examiner can normally be reached Monday through Friday from 10:00 A.M. to 7:00 P.M. (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola, can be reached at (571) 272-1444. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RPB

/Glenn A Caldarola/

Acting SPE of Art Unit 1797